

Cold-Climate Construction

by Ted Cushman

Time was when buildings in the Far North weren't much different from buildings in more moderate climates. Leaky and underinsulated, they were set apart only by their heating equipment: furnaces and boilers powerful enough to roast a woolly mammoth whole.

Since the 1973 oil crisis, government and market forces have pushed northern builders to improve energy efficiency. Twenty-five years of evolution and study have produced a radically different house from the typical home of the 1960s — tighter, more heavily insulated, and equipped with advanced windows and mechanical ventilation. But the various energy-efficient techniques have been adopted piecemeal by builders around the continent, and there is still plenty of discussion about what is the "right way" to build.

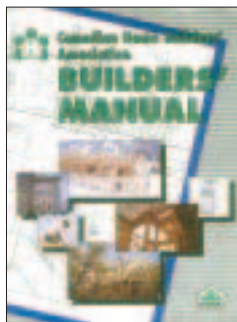
Tundra zone textbooks. Now, builder organizations in Canada and Alaska have produced comprehensive manuals that sum up the lessons learned from recent decades. From foundations to attics, from framing to mechanicals, it's all laid out systematically in the Alaska Craftsman Home Program's *Northern Comfort* and the Canadian Home Builders' Association's *Builders' Manual*. Either volume can serve as a good introduction to building science and a solid reference for cold-climate contractors.

If you look over both volumes, you'll be struck by the similarities in purpose, style, and organization. And while the expression of ideas is different — the Canadian book uses a narrative style, while the Alaskan version often condenses ideas into bulleted lists or outlines — the two manuals essentially agree on the details.

Each book starts with a plain-English



Northern Comfort: Advanced Cold-Climate Home Building Techniques, by the Alaska Craftsman Home Program, Inc., 1995 (907/258-2247; \$40).



Builders' Manual, by the Canadian Home Builders' Association, 1995 (613/230-3060; \$55).

chapter on basic building science — mainly a discussion of heat flow and vapor transport. Early chapters cover design considerations such as siting, and examine the properties of common insulation and vapor barrier materials. Next, each book goes through building components step by step, with chapters on foundations, walls, ceilings, and roofs, and sections devoted to heating and ventilation. Detailed drawings illustrate specific recommendations, ranging from basic framing and insulating practices to heroic measures like double-wall systems and heat-recovery ventilators. Builders in less severe climates may cock an eyebrow at the more involved solutions, such as vapor barriers that wrap around band joists and are caulked at all seams. But if you're building for -30°F with a 40-mph wind chill, these books are a good place to get your design details. ■